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Erskine et al.

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(54) **SLIDING ROOF WINDOW**

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E05F 15/643 (2015.01)

(52) **U.S. Cl.**
CPC ***E05F 15/643*** (2015.01); *E05Y 2201/214* (2013.01); *Y10S 292/20* (2013.01); *Y10S 292/47* (2013.01); *Y10T 292/1051* (2015.04)

(58) **Field of Classification Search**
CPC E05C 3/004; E05C 3/006; E05C 3/008; E05C 3/12; Y10S 292/20; Y10S 292/47; B63B 19/24; E05F 15/643
USPC 49/139, 140, 141, 449
See application file for complete search history.

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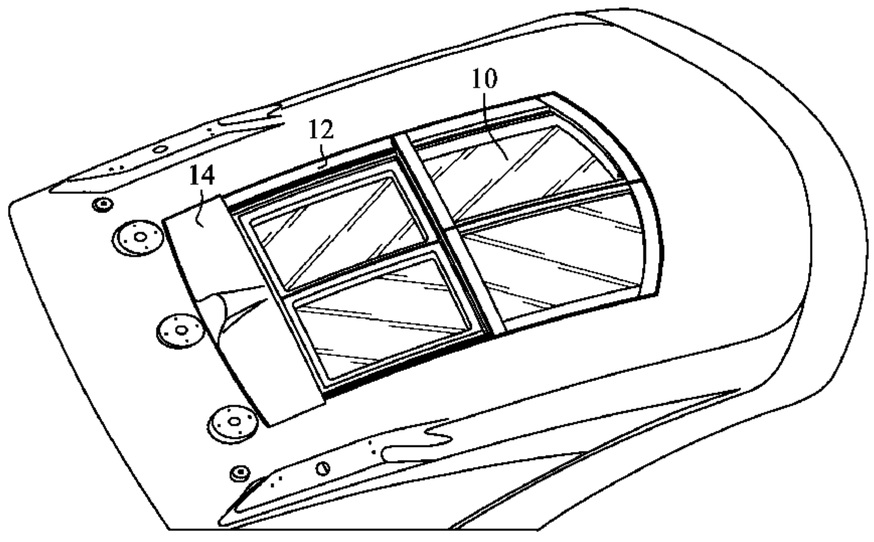
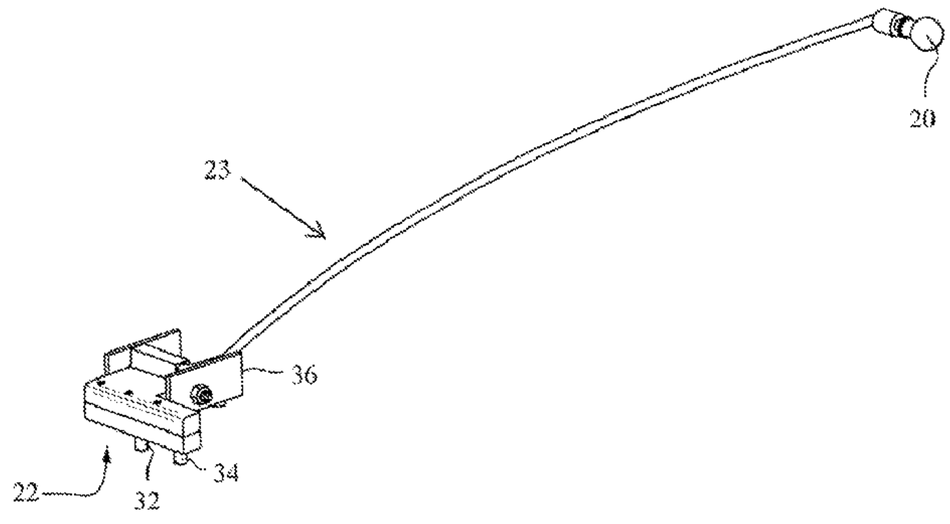
(57) **ABSTRACT**

A release mechanism for selectively connecting and disconnecting a sliding power window from a movable drive block includes a release knob and a release bracket coupled with the release knob by a cable or rod. The release bracket is pivotable between a locked position and a released position by displacement of the release knob. The release bracket includes a drive block pin engageable with the movable drive block and a locking block pin engageable with a fixed locking block. The mechanism allows a boat operator to operate a sliding roof/window manually in case of power failure or the like. The mechanism enables the window to be locked in the opened or closed position, and no tools are required to release the drive or to position/lock the sliding roof/window.

14 Claims, 5 Drawing Sheets





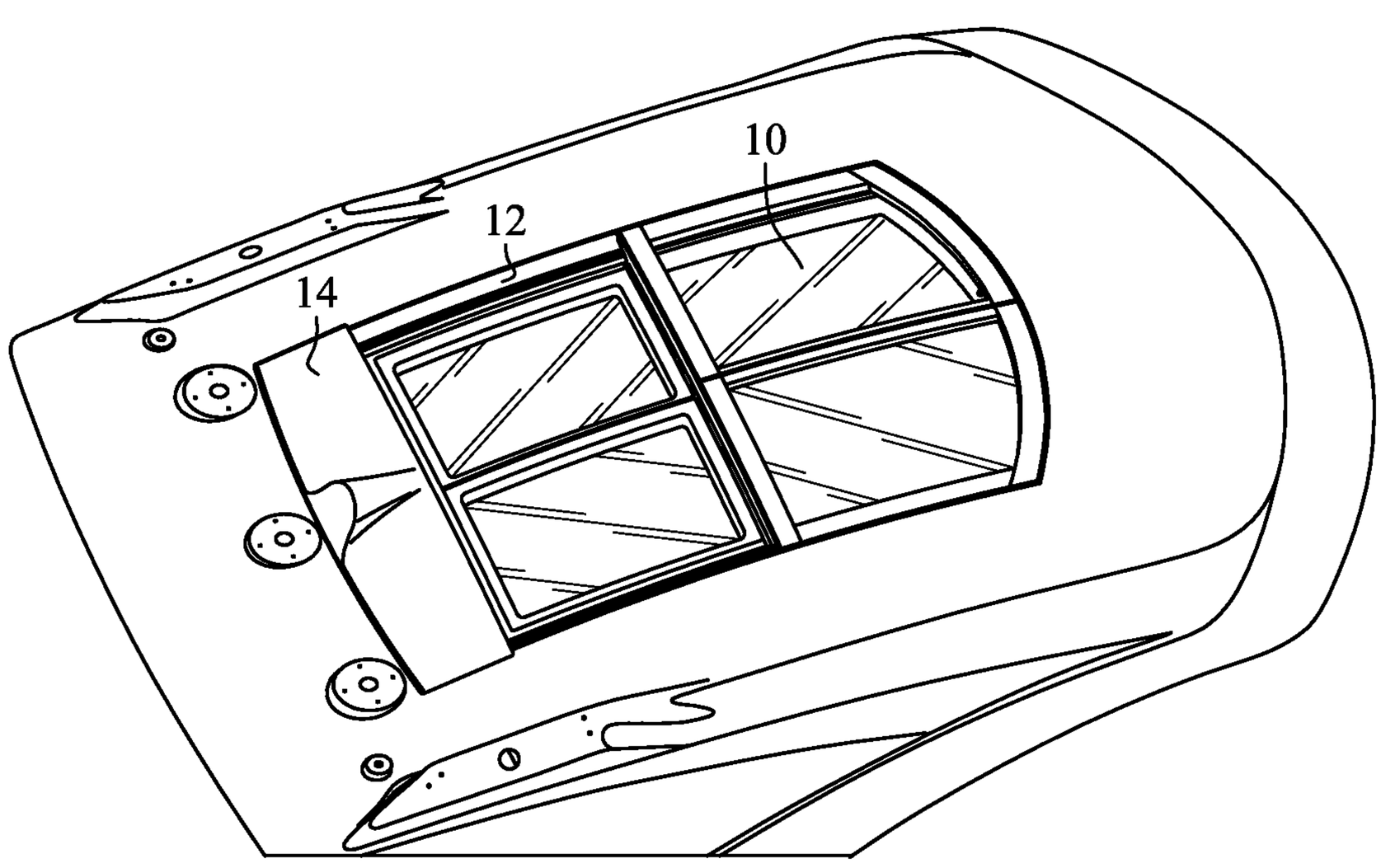


Figure 1

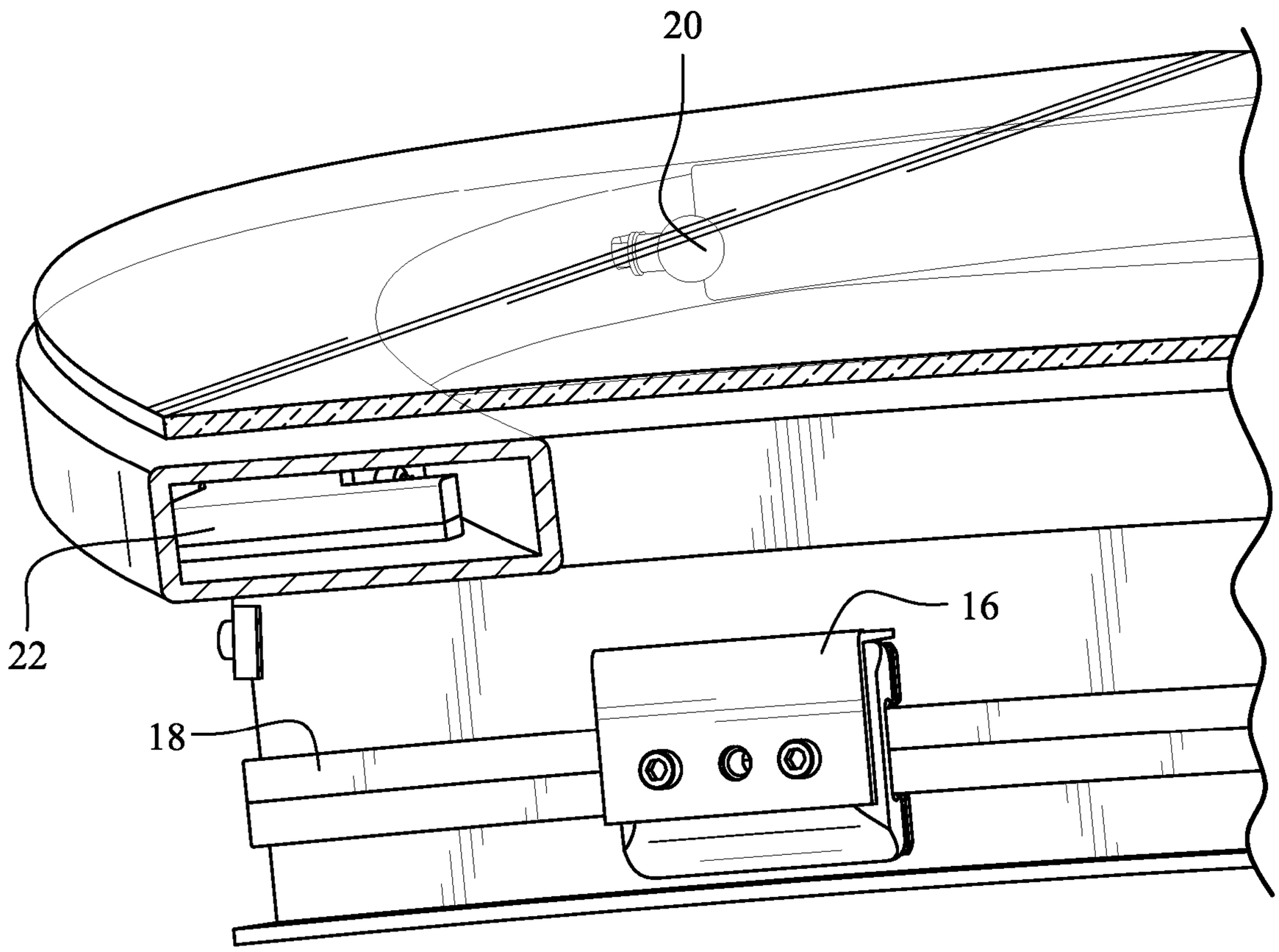


Figure 2

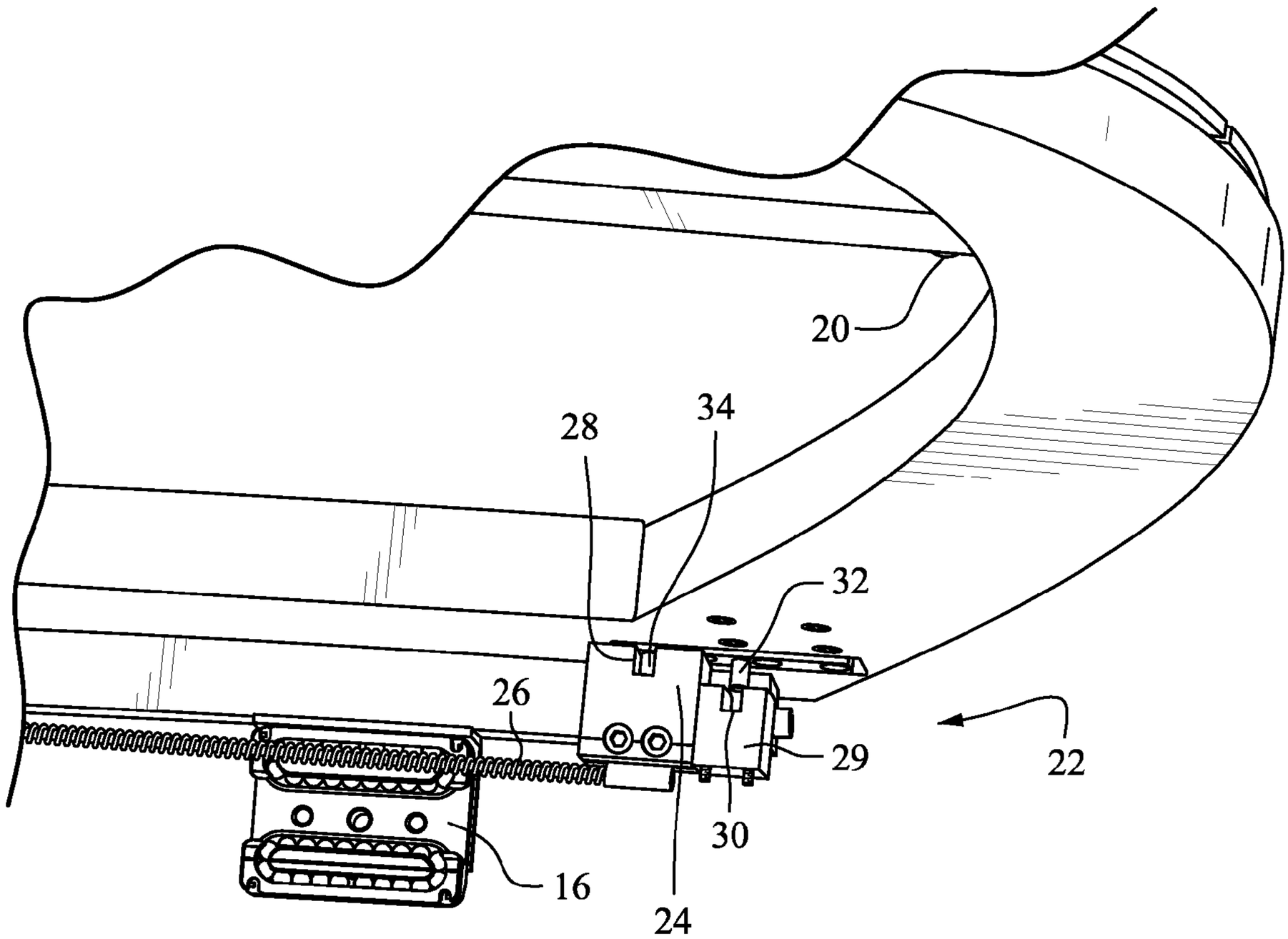


Figure 3

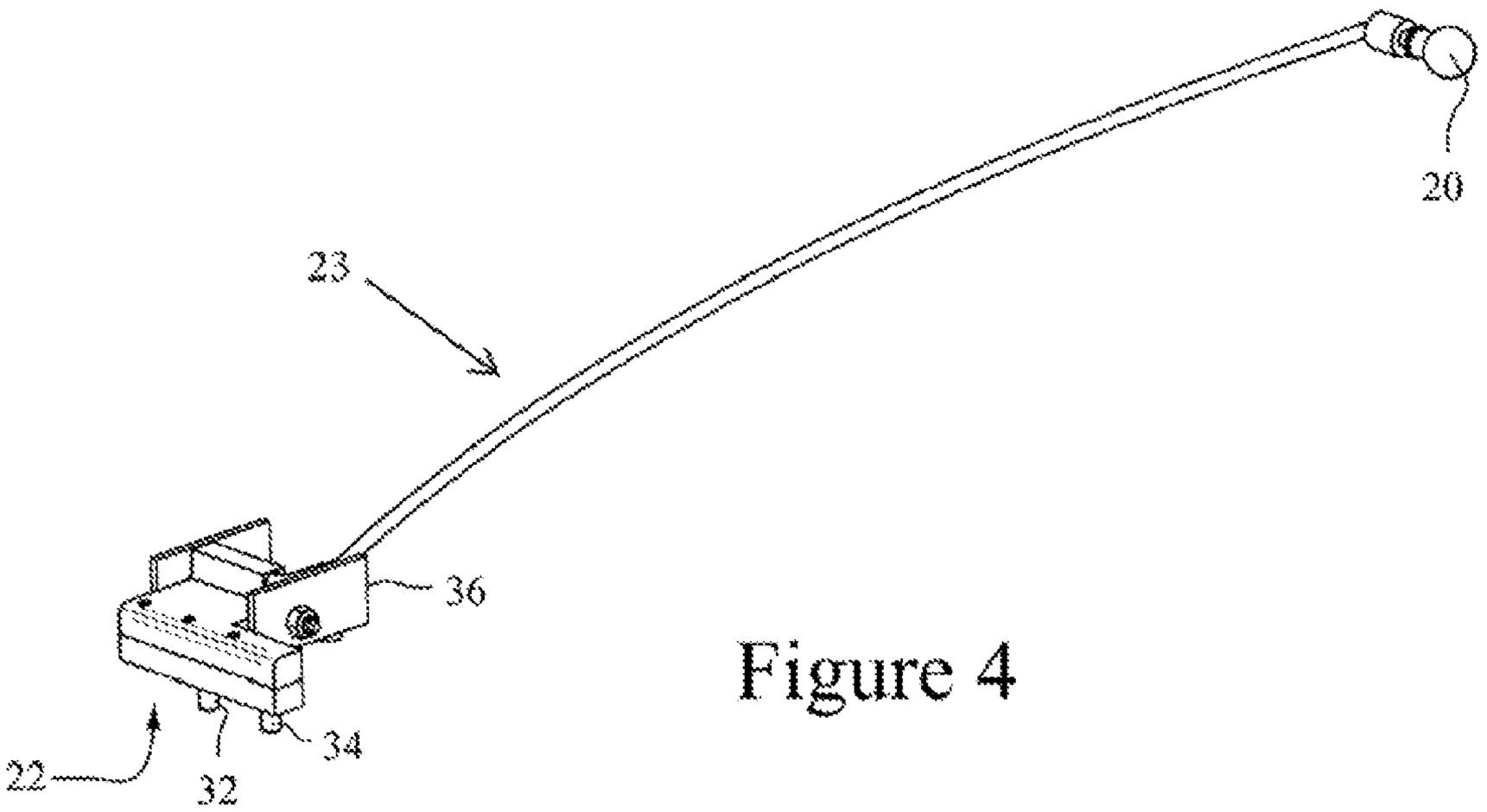


Figure 4

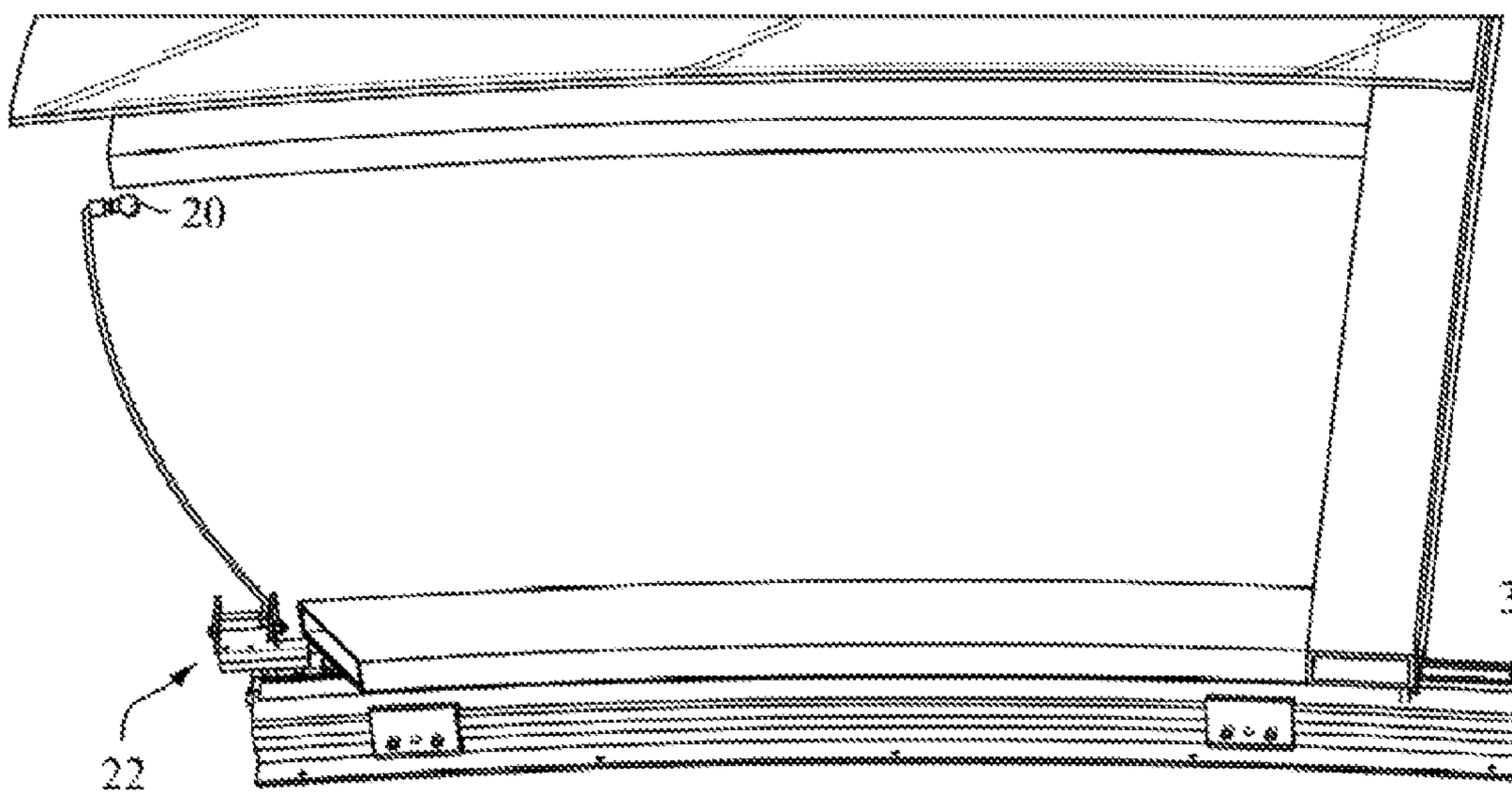


Figure 5

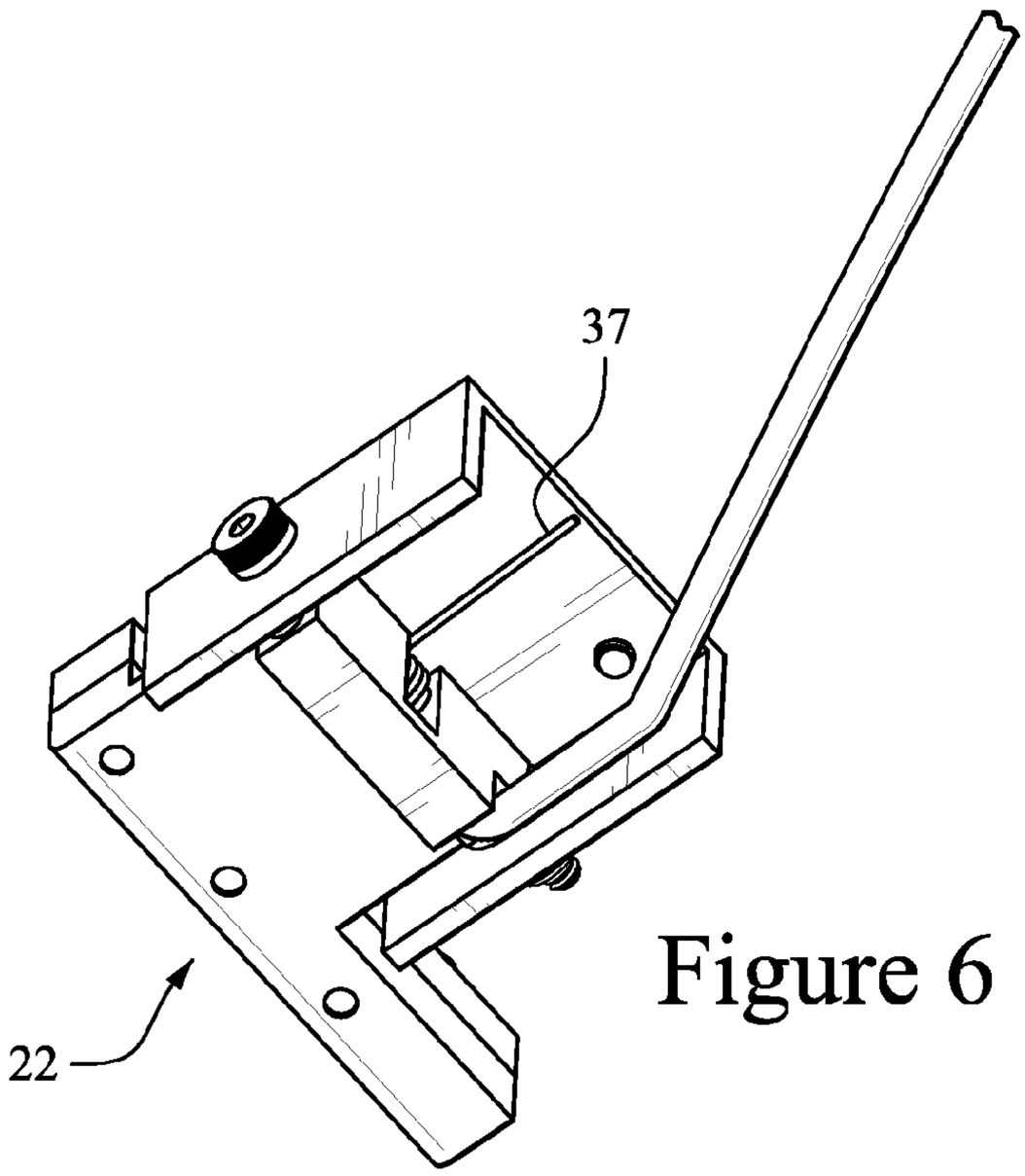


Figure 6

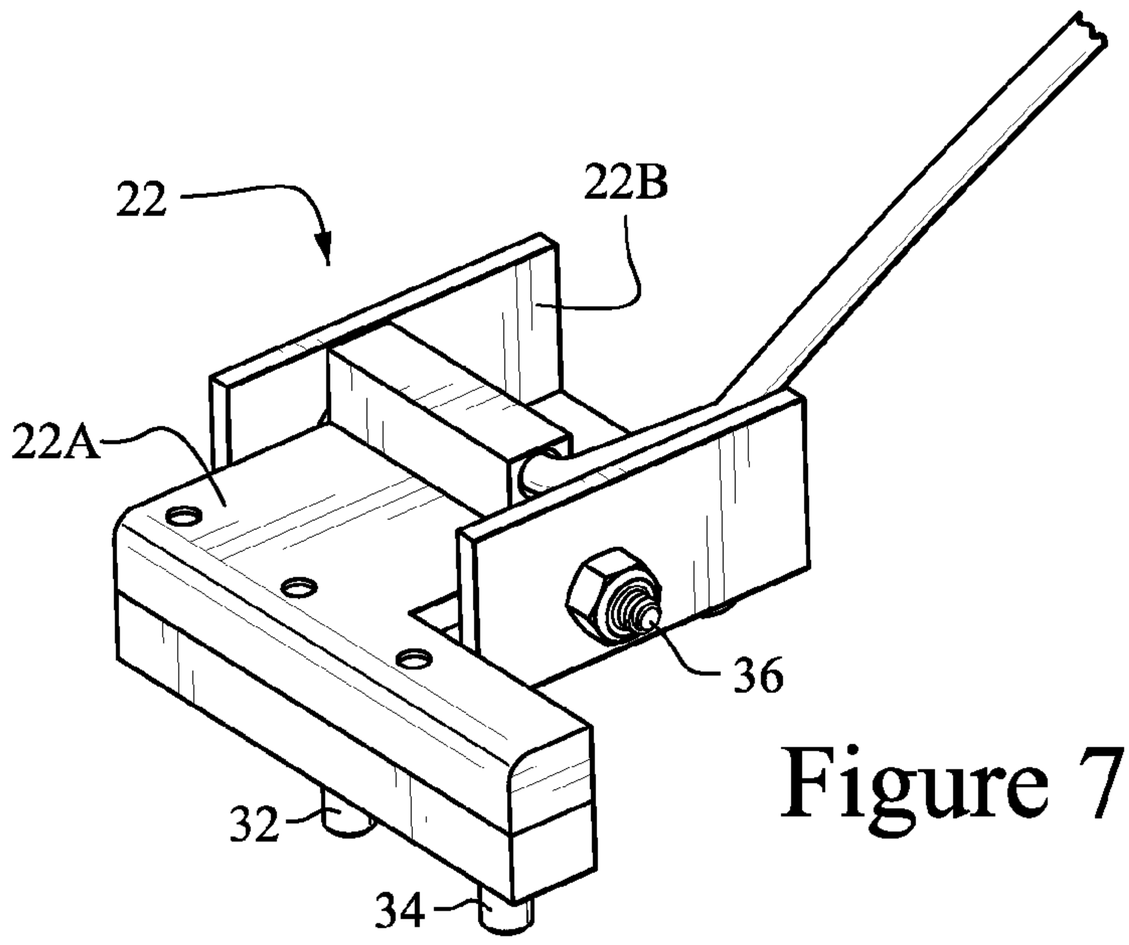


Figure 7

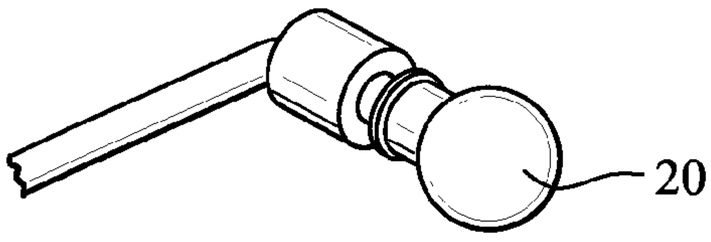


Figure 8

SLIDING ROOF WINDOW

CROSS-REFERENCES TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Patent Application Ser. No. 61/877,515, filed Sep. 13, 2013, the entire content of which is herein incorporated by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

(NOT APPLICABLE)

BACKGROUND OF THE INVENTION

The invention relates to a sliding roof window and, more particularly, to a release mechanism for a sliding roof window.

With existing powered roof windows, the window can be stuck in an open or closed position in the event of power failure. In a marine environment, a stuck open window can be particularly troublesome in the event of wet weather. It would be desirable to provide for manual operation of a sliding roof window in case of power failure or other drive mechanism problems. It would also be desirable to provide for locking the window in the open or closed position in the event of power failure or the like.

BRIEF SUMMARY OF THE INVENTION

The release mechanism according to preferred embodiments allows for manual operation of the roof window in case of power failure or other mechanism failure. The release mechanism enables the window to be locked in the opened or closed position, and no tools are required to operate the manual control.

In an exemplary embodiment, a release mechanism for selectively connecting and disconnecting a sliding power window from a movable drive block includes a release knob, a release bracket coupled with the release knob by a cable or rod, and a spring. The release bracket is pivotable between a locked position and a released position by displacement of the release knob. The release bracket includes a drive block pin engageable with the movable drive block and a locking block pin engageable with a fixed locking block. The spring is cooperable with the release bracket and biases the release bracket to the locked position. The release bracket may include a pivot bracket connected to a bracket frame by a pivot bolt, where the drive block pin and the locking block pin are attached to the pivot bracket. In this context, the spring may be a torsion spring coupled to the pivot bolt and acting on the pivot bracket. The release bracket may be positioned on one side of a window unit, where the release knob is positioned remotely. The drive block pin may be spaced from the locking block pin along a direction in which the window opens and closes.

In another exemplary embodiment, a window assembly includes a window unit displaceable in a window frame between an open position and a closed position, a movable drive block coupled with the window unit, a fixed locking block secured to the window frame, and the release mechanism for selectively connecting and disconnecting the window unit from the movable drive block. The release mechanism may be coupled with the window unit. The assembly may include an auxiliary locking block disposed at an opposite end of the window frame from the fixed locking block.

In yet another exemplary embodiment, a release mechanism for selectively connecting and disconnecting a sliding power window from a movable drive block includes a release knob, and a release bracket coupled with the release knob by a cable or rod, where the release bracket is pivotable between a locked position and a released position by displacement of the release knob. The release bracket includes a drive block pin engageable with the movable drive block and a locking block pin engageable with a fixed locking block, where the drive block pin is spaced from the locking block pin along a direction in which the window opens and closes.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other aspects and advantages will be described in detail with reference to the accompanying drawings, in which:

FIG. **1** is a plan view of a sliding roof window;

FIG. **2** shows an exterior view of the release mechanism;

FIG. **3** shows the mechanism from the inside with the track removed;

FIG. **4** is an isolated view of the release mechanism;

FIG. **5** shows the release mechanism attached to a window unit; and

FIGS. **6-8** are mechanical drawings of the release mechanism.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** is a plan view of a sliding roof window or window unit **10** that is displaceable in a recessed casing and window frame **12** between a closed position (shown in FIG. **1**) and an open position. The window unit **10** is displaceable via a power drive mechanism disposed inside a cover assembly **14** in FIG. **1**. The drive mechanism is known, and details thereof will not be further described. An exemplary drive system is manufactured by Taylor Made Systems of Gloversville, N.Y.

FIG. **2** shows an exterior view of the release mechanism. The window unit **10** is fixed for movement on a bearing car **16** or the like that rides on a track **18**. The release mechanism is attached to the window unit **10** for displacement with the window unit and includes a release knob **20**, which deflects a release bracket **22** via a cable or rod **23** (see FIG. **4**). The release knob **20** is accessible by the boat operator from inside the boat.

FIG. **3** shows the mechanism from inside with the track/cover removed. The mechanism includes a drive block **24**, preferably formed of plastic, with two bolts as shown that drives the window back and forth via a spiral cable or rod **26** coupled with the drive system. The release mechanism also includes a drive block pin **34** that is received in a slot **28** in the drive block **24**. A locking block **29** similarly includes a slot **30**, but its locking block pin **32** does not engage in the position in FIG. **3** because the mechanism is engaged with the drive block **24**. The drive block pin **34** is spaced from the locking block pin **32** along a direction in which the window opens and closes. As such, when the window unit is displaced to the closed position, the position will be the same regardless of whether the window unit is closed manually or by the drive system.

FIG. **4** is an isolated view of the release mechanism, and FIGS. **6-8** are mechanical drawings of the mechanism. The release bracket **22** of the release mechanism includes a pivot bracket **22**A pivotably connected to a pivot frame **22**B by a pivot bolt **36**. The pins that selectively engage slots **28**, **30** are

shown. In FIG. **4**, the drive block pin **34** is engageable with the slot **28** in the drive block **24**, and the locking block pin **32** is engageable with the slot **30** in the locking block **29**. When the knob **20** is displaced to the right (in the drawings—starboard, for example), the release bracket **22** is pivoted up and around the pivot bolt **36**, which pulls the pins **32**, **34** up. A torsion spring **37** (shown in FIG. **6**) is preferably coupled with the pivot bolt **36** and biases the release mechanism **22** down, against the deflection of the release bracket **22** by the knob **20**. With the release bracket pivoted upward, the pin **34** disengages the drive block **24**, and the window unit is free to slide on the track with no power. That is, the boat operator can simply pull the knob **20** to release the window unit from the power system, and the window unit can freely slide back and forth.

In use, assume a scenario where the window is halfway open, and the mechanism experiences a power failure. If it is desired to close the window, the operator displaces the knob **20** to release the drive mechanism (in this example, with reference to FIG. **3**, the drive block **24** would have been driven somewhere off to the left in FIG. **3** when the window was opened). With the drive mechanism released, the window can be manually slid closed where the locking block pin **32** is aligned with the slot **30** in the locking block **29**. In this alignment, the locking block pin **32** drops into the slot **30**, and the window is locked shut even with the power disabled.

FIG. **5** shows the window frame including the release bracket **22** and the knob **20**. Like block **29**, an auxiliary block **38** is added at an opposite end of the window path. In the event of a power failure, the window can also be locked in the open position manually by activating the release mechanism via the knob **20**, manually opening the window, and when the window reaches its max open position, the pin **34** will engage a corresponding slot in the auxiliary block **38**.

The mechanism allows a boat operator to operate a sliding roof window manually in case of power failure or the like. The mechanism enables the window to be locked in the opened or closed position, and no tools are required to release the drive or to position/lock the sliding roof window.

While the invention has been described in connection with what is presently considered to be the most practical and preferred embodiments, it is to be understood that the invention is not to be limited to the disclosed embodiments, but on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

The invention claimed is:

1. A release mechanism for selectively connecting and disconnecting a sliding power window from a movable drive block, the release mechanism comprising:

a release knob;

a release bracket coupled with the release knob by a cable or rod, wherein the release bracket is pivotable between a locked position engaged with the movable drive block and a released position by displacement of the release knob such that with the release bracket in the locked position, displacement of the release knob pivots the release bracket from the locked position to the released position, the release bracket including a drive block pin engageable with the movable drive block and a locking block pin engageable with a fixed locking block; and

a spring cooperable with the release bracket and biasing the release bracket to the locked position, wherein the release bracket comprises a pivot bracket connected to a bracket frame by a pivot bolt, the pivot bracket being pivotable about the pivot bolt, and wherein the drive block pin and the locking block pin are directly attached to the pivot bracket.

2. The release mechanism according to claim **1**, wherein the spring comprises a torsion spring coupled with the pivot bolt and acting on the pivot bracket.

3. The release mechanism according to claim **1**, wherein the release bracket is positioned on one side of a window unit, and wherein the release knob is positioned remotely from the release bracket.

4. The release mechanism according to claim **1**, wherein the drive block pin is spaced from the locking block pin along a direction in which the window opens and closes.

5. A window assembly comprising:

a window unit displaceable in a window frame between an open position and a closed position;

a movable drive block coupled with the window unit and with a drive system for displacing the window unit by displacing the movable drive block;

a fixed locking block secured to the window frame; and

a release mechanism for selectively connecting and disconnecting the window unit from the movable drive block and from the fixed locking block, the release mechanism comprising:

a release knob,

a release bracket coupled with the release knob by a cable or rod, wherein the release bracket is pivotable between a locked position engaged with the movable drive block or the fixed locking block and a released position by displacement of the release knob such that with the release bracket in the locked position, displacement of the release knob pivots the release bracket from the locked position to the released position, the release bracket including drive block pin engageable with the drive block and a locking block pin engageable with the fixed locking block, wherein the locking block pin is engageable with the fixed locking block with the window unit released from the drive system, and

a spring cooperable with the release bracket and biasing the release bracket to the locked position, wherein the release bracket comprises a pivot bracket connected to a bracket frame by a pivot bolt, the pivot bracket being pivotable about the pivot bolt, and wherein the drive block pin and the locking block pin are directly attached to the pivot bracket.

6. The window assembly according to claim **5**, wherein the release mechanism is coupled with the window unit.

7. The window assembly according to claim **5**, wherein the spring comprises a torsion spring coupled with the pivot bolt and acting on the pivot bracket.

8. The window assembly according to claim **5**, wherein the release bracket is positioned on one side of the window unit, and wherein the release knob is positioned remotely from the release bracket.

9. The window assembly according to claim **5**, wherein the drive block pin is spaced from the locking block pin along a direction in which the window unit opens and closes.

10. The window assembly according to claim **5**, further comprising an auxiliary locking block disposed at an opposite end of the window frame from the fixed locking block.

11. A release mechanism in combination with a sliding power window including a window unit, the release mechanism selectively connecting and disconnecting the sliding power window from a drive system, the release mechanism and sliding power window comprising:

a movable drive block coupled with the window unit and with the drive system for displacing the window unit by displacing the movable drive block;

a fixed locking block secured adjacent the window unit and separate from the window unit;

a release knob; and

a release bracket coupled with the release knob by a cable or rod, wherein the release bracket is pivotable between a locked position engaged with the movable drive block or the fixed locking block and a released position by displacement of the release knob such that with the release bracket in the locked position, displacement of the release knob pivots the release bracket from the locked position to the released position, the release bracket including a drive block pin engageable with the movable drive block and a locking block pin engageable with a fixed locking block,

wherein the drive block pin is spaced from the locking block pin along a direction in which the window opens and closes, and wherein the locking block pin extends

along a longitudinal axis in a direction perpendicular to the direction in which the window opens and closes such that with the drive block pin engaged with the movable drive block, the locking block pin is spaced from the fixed locking block.

12. The release mechanism and sliding power window according to claim **11**, further comprising a spring cooperable with the release bracket and biasing the release bracket to the locked position.

13. The release mechanism and sliding power window according to claim **12**, wherein the release bracket comprises a pivot bracket connected to a bracket frame by a pivot bolt, and wherein the drive block pin and the locking block pin are attached to the pivot bracket.

14. The release mechanism and sliding power window according to claim **13**, wherein the spring comprises a torsion spring coupled with the pivot bolt and acting on the pivot bracket.

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